

30-015-29585

COG OPERATING

Grayburg Jackson
Eddy County, NM
Berry A Federal #8
VH - Job #32K10111033

Survey: Actual

SDI Standard Survey Report

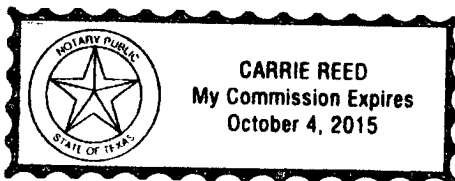
This survey is correct to the best of my knowledge and is supported by actual field data.

K. Horton

Notarized this date 15th of November, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #8
Project:	Grayburg Jackson	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Berry A Federal #8	North Reference:	Grid
Wellbore:	VH - Job #32K10111033	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111033	Database:	EDM-Regulatory

Project	Grayburg Jackson		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Eddy County, NM		
Site Position:		Northing:	665,097 06 usft
From:	Lat/Long	Easting:	601,778 12 usft
Position Uncertainty:	0 0 usft	Slot Radius:	0"
		Latitude:	32° 49' 40 800 N
		Longitude:	104° 0' 7 200 W
		Grid Convergence:	0 18 °

Well	Berry A Federal #8, Vertical		
Well Position	+N/-S	0 0 usft	Northing: 662,936 10 usft
	+E/-W	0 0 usft	Easting: 608,543 36 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 19 200 N
		Longitude:	103° 58' 48 000 W
		Ground Level:	0 0 usft

Wellbore	VH - Job #32K10111033				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/26/2011	7 78	60 66	48,921

Design	VH - Job #32K10111033				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0 0	0 0	0 0	1 58	

Survey Program	Date	11/14/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100 0	6,222 0	Actual (VH - Job #32K10111033)	Keeper	Keeper Gyro	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0	
100 0	0 29	245 83	100 0	-0 1	-0 2	245 83	0 3	
200 0	0 20	195 17	200 0	-0 4	-0 5	233 49	0 6	
300 0	0 17	178 10	300 0	-0 7	-0 5	218 37	0 9	
400 0	0 33	274 91	400 0	-0 8	-0 8	225 49	1 2	
500 0	0 87	305 53	500 0	-0 4	-1 7	258 59	1 8	
600 0	0 90	313 61	600 0	0 6	-2 9	282 22	3 0	
700 0	1 10	316 04	700 0	1 9	-4 2	294 17	4 6	
800 0	1 14	330 45	799 9	3 4	-5 3	302 78	6 3	
900 0	1 15	355 01	899 9	5 3	-5 9	311 90	7 9	
1,000 0	1 25	359 85	999 9	7 4	-6 0	320 97	9 5	
1,100 0	1 26	3 94	1,099 9	9 6	-5 9	328 29	11 2	

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #8
Project:	Grayburg Jackson	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Berry A Federal #8	North Reference:	Grid
Wellbore:	VH - Job #32K10111033	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111033	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	1 14	9 83	1,199 9	11 6	-5 7	334 06	12 9
1,300 0	1 07	9 60	1,299 8	13 5	-5 3	338 49	14 6
1,400 0	1 16	3 95	1,399 8	15 5	-5 1	341 72	16 3
1,500 0	1 29	359 18	1,499 8	17 6	-5 1	343 97	18 3
1,600 0	1 26	358 28	1,599 8	19 8	-5 1	345 56	20 5
1,700 0	1 24	351 55	1,699 7	22 0	-5 3	346 46	22 6
1,800 0	1 46	346 53	1,799 7	24 3	-5 8	346 68	25 0
1,900 0	1 70	346 35	1,899 7	27 0	-6 4	346 66	27 7
2,000 0	1 96	346 64	1,999 6	30 1	-7 1	346 64	30 9
2,100 0	2 06	344 23	2,099 6	33 5	-8 0	346 51	34 4
2,200 0	2 28	340 80	2,199 5	37 1	-9 2	346 11	38 2
2,300 0	2 48	346 61	2,299 4	41 1	-10 3	345 89	42 4
2,400 0	2 59	345 84	2,399 3	45 4	-11 4	345 92	46 8
2,500 0	2 53	349 70	2,499 2	49 7	-12 3	346 08	51 2
2,600 0	2 41	345 64	2,599 1	53 9	-13 2	346 20	55 6
2,700 0	2 20	343 15	2,699 0	57 8	-14 3	346 09	59 6
2,800 0	2 05	350 44	2,799 0	61 4	-15 2	346 12	63 3
2,900 0	1 91	353 31	2,898 9	64 8	-15 7	346 42	66 7
3,000 0	1 80	356 14	2,998 9	68 1	-16 0	346 80	69 9
3,100 0	2 00	347 64	3,098 8	71 3	-16 4	347 02	73 2
3,200 0	1 97	347 37	3,198 7	74 7	-17 2	347 04	76 7
3,300 0	1 74	0 45	3,298 7	77 9	-17 6	347 30	79 9
3,400 0	1 83	352 86	3,398 6	81 0	-17 7	347 64	82 9
3,500 0	1 54	351 47	3,498 6	83 9	-18 1	347 80	85 9
3,600 0	1 72	343 28	3,598 6	86 7	-18 8	347 78	88 7
3,700 0	1 65	351 98	3,698 5	89 6	-19 4	347 77	91 6
3,800 0	1 85	355 71	3,798 5	92 6	-19 7	347 97	94 7
3,900 0	1 81	342 54	3,898 4	95 7	-20 3	348 01	97 8
4,000 0	1 53	0 20	3,998 4	98 5	-20 8	348 09	100 7
4,100 0	1 49	1 59	4,098 3	101 2	-20 8	348 41	103 3
4,200 0	1 43	344 20	4,198 3	103 7	-21 1	348 52	105 8
4,300 0	1 41	15 89	4,298 3	106 1	-21 1	348 77	108 1
4,400 0	2 08	25 85	4,398 2	108 9	-19 9	349 63	110 7
4,500 0	1 98	23 16	4,498 2	112 1	-18 5	350 65	113 6
4,600 0	2 06	31 18	4,598 1	115 2	-16 9	351 68	116 5
4,700 0	1 80	23 15	4,698 1	118 2	-15 3	352 62	119 2
4,800 0	1 35	24 48	4,798 0	120 7	-14 2	353 29	121 6
4,900 0	1 39	21 43	4,898 0	122 9	-13 3	353 84	123 6
5,000 0	1 66	20 87	4,998 0	125 4	-12 3	354 40	126 0
5,100 0	2 10	20 90	5,097 9	128 5	-11 1	355 05	129 0
5,200 0	1 83	21 81	5,197 8	131 7	-9 9	355 70	132 0
5,300 0	1 75	14 00	5,297 8	134 6	-8 9	356 21	134 9
5,400 0	1 79	28 04	5,397 7	137 5	-7 8	356 74	137 7
5,500 0	2 43	17 89	5,497 7	140 9	-6 4	357 38	141 0

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #8
Project:	Grayburg Jackson	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Berry A Federal #8	North Reference:	Grid
Wellbore:	VH - Job #32K10111033	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K10111033	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600 0	2 77	25 74	5,597 6	145 1	-4 7	358 13	145 2
5,700 0	3 20	26 79	5,697 4	149 8	-2 4	359 07	149 8
5,800 0	3 97	22 97	5,797 2	155 4	0 2	0 07	155 4
5,900 0	4 12	13 16	5,897 0	162 1	2 3	0 83	162 1
6,000 0	4 46	10 20	5,996 7	169 4	3 9	1 30	169 5
6,100 0	4 39	7 44	6,096 4	177 1	5 0	1 63	177 1
6,200 0	4 84	356 91	6,196 1	185 1	5 3	1 64	185 1
6,222 0	4 86	353 78	6,218 0	186 9	5 2	1 58	187 0